

IN THE CLAIMS

Please amend the claims as follows:

1-6. canceled

7. (currently amended) A method for performing lock management for a flash copy in a shared storage system, said method comprising:

storing a copy of data structure defining a coherency relationship between a region of data and a flash copy image of said region of data within a cache of said shared storage system, wherein said data structure is subject to one or more lock protocols controlled by an owner storage controller node within said shared storage system designating only one node within said shared storage system, wherein said data structure includes a previous positive confirmation that said region of data a flash copy associated with said flash copy image of said region of data are consistent ~~an owner node for metadata relating to all input/output (I/O) relationships of a region of storage;~~

receiving a request to perform an input/output operation on at least one of said region of data and said flash copy image of said region of data at a client storage controller node ~~designating remaining nodes~~ within said shared storage system ~~client nodes; and~~

performing said input/output operation at an input/output performing component of said client storage controller node utilizing said copy of data structure, in response to a host I/O request arriving at one of said client nodes, suspending said host I/O request by said one client node and inquiring said owner node if said region of storage associated with said host I/O request has been copied;

placing a lock record by said owner node against an appropriate metadata for said region of storage associated with said host I/O request if said region of storage associated with said host I/O request has not been copied;

if said host I/O request is a Target Read, transferring data to a host by said one client node via a Flash Copy algorithm, and sending an UNL message to said owner node by said one client node at the completion of said data transfer;

if said host I/O request is a Target Write or Source Write, performing a copy-on-write by said one client node, and sending an UNLC request to said owner node by said one client node at the completion of said copy-on-write;

upon the receipt of said UNLC request,

marking by said owner node in its metadata a region affected;

removing said lock record;

informing any waiting requests that said region has been copied and issuing an UNLD message to said one client node;

upon the receipt of said UNLD message, releasing said suspended write operation by said one client node and completing said write operation to said host; and

removing said lock record by said owner node from its metadata table upon the receipt of said UNL message.

8-18. canceled

19. (new) The method of Claim 7, wherein said previous positive confirmation further includes a positive confirmation that another region of data, contiguous with said region of data, is consistent with said flash copy.

20. (new) The method of Claim 7, wherein said method further includes discarding said previous positive confirmation utilizing said input/output performing component.

21. (new) The method of Claim 7, wherein said method further includes selectively discarding said copy of said data structure.

22. (new) A computer-readable medium having a computer program product for performing lock management for a flash copy in a shared storage system, said computer-readable medium comprising:

computer program code for storing a copy of data structure defining a coherency relationship between a region of data and a flash copy image of said region of data within a cache of said shared storage system, wherein said data structure is subject to one or more lock protocols controlled by an owner storage controller node within said shared storage system within said shared storage system, wherein said data structure includes a previous positive confirmation that said region of data a flash copy associated with said flash copy image of said region of data are consistent;

computer program code for receiving a request to perform an input/output operation on at least one of said region of data and said flash copy image of said region of data at a client storage controller node within said shared storage system; and

computer program code for performing said input/output operation at an input/output performing component of said client storage controller node utilizing said copy of data structure.

23. (new) The computer-readable medium of Claim 22, wherein said previous positive confirmation further includes a positive confirmation that another region of data, contiguous with said region of data, is consistent with said flash copy.

24. (new) The computer-readable medium of Claim 22, wherein said computer-readable medium further includes computer program code for discarding said previous positive confirmation utilizing said input/output performing component.

25. (new) The computer-readable medium of Claim 22, wherein said computer-readable medium further includes computer program code for selectively discarding said copy of said data structure.

26. (new) A shared storage system capable of performing lock management for a flash copy, said shared storage system comprising:

means for storing a copy of data structure defining a coherency relationship between a region of data and a flash copy image of said region of data within a cache of said shared storage system, wherein said data structure is subject to one or more lock protocols controlled by an owner storage controller node within said shared storage system within said shared storage system, wherein said data structure includes a previous positive confirmation that said region of data a flash copy associated with said flash copy image of said region of data are consistent;

means for receiving a request to perform an input/output operation on at least one of said region of data and said flash copy image of said region of data at a client storage controller node within said shared storage system; and

means for performing said input/output operation at an input/output performing component of said client storage controller node utilizing said copy of data structure.

27. (new) The system of Claim 26, wherein said previous positive confirmation further includes a positive confirmation that another region of data, contiguous with said region of data, is consistent with said flash copy.

28. (new) The system of Claim 26, wherein said system further includes means for discarding said previous positive confirmation utilizing said input/output performing component.

29. (new) The system of Claim 26, wherein said system further includes means for selectively discarding said copy of said data structure.